Plant Pathology Circular No. 327
January 1990

Fla. Dept. Agric. & Consumer Serv.
Division of Plant Industry

BLACK SPOT OF ROSE (ROSA SP.)

Robert M. Leahy[1]

Roses have long been considered a premier flowering woody ornamental used extensively in gardens, landscapes, and in cut flower arrangements. They are grown commercially in containers, as field liners, and in greenhouses. The increasing popularity of roses over the years is due not only to their aesthetically pleasing shape and gentle fragrance but also to the extensive breeding of this flowering ornamental. Dozens of varieties are available today, each sporting its own unique form and color.

Fig. 1. Early and late symptoms of black spot. Chlorosis follows infection and spots may coalesce as disease developes.

Fig. 2. Severe infection of black spot showing minute black acuvuli.

PATHOGEN: The most important disease of roses world wide is black spot caused by the fungus, Diplocarpon rosae Wolf. This disease is found in all areas of the world where cultivated roses are grown, but is seen rarely in glasshouse-grown rose crops (1). Black spot frequently reaches epidemic proportions on outdoor grown roses. Diplocarpon rosae is seen most commonly in its anamorphic or asexual state, Marssonina rosae (Lib.) Died. (1). Colorless, two-celled conidia (asexual spores) of M. rosae develop in subcuticular acervuli on leaves and young shoots during the summer months (4). As these spores germinate, they penetrate directly through the leaf cuticle and develop nutrient-absorbing haustoria in subcuticular tissues within 15 hours after infection (3,4). This fungal pathogen is specific to Rosa spp. and various races of Diplocarpon rosae have been described (4). D. rosae may form perithecia on dead, decaying leaf litter or on overwintering foliage, but is rarely seen, and is apparently non-essential to the survival of the fungus or in disease development (1).

SYMPTOMS: Symptoms of black spot begin as small dark lesions which vary in size from 2-12 mm. These leaf spots are characteristically black or dark brown and are generally circular, but can develop a radiate pattern. In severe infections, leaf spots may coalesce. Infected leaves develop chlorosis and

[1]Biological Scientist II, Division of Plant Industry, Fla. Dept. Agric. & Consumer Serv., P. O. Box 1269, Gainesville, FL 32602.

abscise prematurely (1,3). Young twigs or canes can become infected and develop reddish purple irregular lesions which are typically raised. Flower parts and fruits may also become infected but symptoms are variable (1). Petals develop small reddish spots and become distorted. Symptoms on other flower parts and petioles are much more inconspicuous but may appear as small reddish or black spots. Acervuli of M. rosae can be observed readily on foliar lesions as small black pustular structures (1). During periods conducive to conidial development, spores can be seen as white slimy masses exuding from acervuli (3).

CONTROL: Planting resistant varieties is one of the most common cultural controls used to avoid many plant diseases. Unfortunately, there has been little success in developing black spot resistant rose varieties because resistance is uncommon in most breeding lines. In fact, the most popular varieties are also among the most susceptible hosts. Although the removal or isolation of the most susceptible varieties from rose plantings can help reduce disease spread, cultural methods of control used for black spot are generally unsatisfactory without the addition of fungicidal treatment. Various cultural control strategies exist; however, they should be used in tandem with registered fungicides for best results. The cultural control methods outlined for black spot control can help reduce fungal inoculum and minimize environmental conditions which are conducive to disease development (1,3).

Infected leaves and leaf litter should be collected and destroyed. Infected canes should be pruned and discarded. Rose foliage should not remain wet for long periods of time (7-12 hrs) and overhead irrigation should be avoided if possible. Overcrowding of plants should be curtailed in order to maximize air circulation between plants (1).

In addition to these cultural control practices, growers should use a registered fungicide to help control black spot. Sterol-inhibiting fungicides are among the most effective against this disease, especially when used with a spreader sticker (2).

SURVEY AND DETECTION: Characteristic symptoms of black spot are 2-12 mm mostly circular, brown to black leaf spots, sometimes developing a feathery, radiate pattern. Leaf spots found on heavily infected roses tend to coalesce and cause extensive necrosis. Infected leaves become chlorotic and abscise prematurely. Acervuli of Marssonina rosae can be detected on the upper leaf surface as minute shiny black pustules. During periods of high humidity and moisture, conidia may exude from acervuli and can be seen as slimy white masses.

LITERATURE CITED

1. Coyier, Duane L. 1985. Roses. In: Diseases of floral crops. Volume 2. Ed: David L. Strider. pp. 405-488.

2. Hagan, Austin, C. H. Gilliam, and D. C. Fare. 1989. Effect of spray interval and rate of new fungicides on black spot control on roses. In: Ornamentals. Research Rpt. No. 6. Aug. 1989. Alabama Agric. Exp. Sta. Auburn Univ., Alabama. pp. 5-6.

3. Horst, Kenneth R. 1983. Compendium of rose diseases. The American Phytopath. Soc. p. 7-11.

4. Sivanesan, A. and I. A. S. Gibson. 1976. Diplocarpon rosae. Commonwealth Mycol. Inst., Description of Pathogenic Fungi and Bacteria #485.

Contribution No. 648, Bureau of Plant Pathology

This publication was issued at a cost of $923.99 or $0.21 per copy to provide information on proper recognition of plant pests. PI90T-06